



Hermes products for the calibrating and finishing of processed wood boards

Sanding belts SB 379 ZZ
Graphite cloth GL 580 and GL 581
Hermes foam pad

Online-version
with updated product data

General

Processed wood boards are products such as chipboards, hardboard panels, medium-density fibre boards and plywood panels. After pressing, they are sanded on widebelt sanders. The sanding process is intended to achieve two properties: a specified constant thickness over the whole of the panel and from one panel to another, and sufficiently good surface quality for subsequent processing.

The usual procedure is to sand large-format panels. This requires sanding machines with particularly large working widths. In Europe, the most widely used machines are from Anthon (Germany), Bison (Germany), Imeas (Italy) and Steinemann (Switzerland). In America, machines from the US manufacturers Kimwood, Tidland and Timesavers are also used.

The requirements for high stock removal and fine panel surface make it necessary to use a number of sanding heads for machining the top and bottom of the panels. Most configurations use six sanding heads. These configurations are generally described by the contact element used - contact roll station, combined station (contact rolls and bar) and contact bar station. In order to compensate for inequalities of pressing and to get into the regions of higher chipboard density, the panels are "calibrated" at contact roll stations, i.e. they are sanded plane-parallel to their final thickness with a small allowance. This allowance (maximum 0.4mm) is required for subsequent finish sanding at the contact bar stations. If the removal thicknesses have to be distributed to a number of contact roll stations due to high feed rate, an additional contact roll station is normally used. As the contact rolls do not run completely free of vibration, there are transverse marks ("chatter marks") left on the panel surfaces. In order to achieve the required panel surface, the finer-grit sanding belts are supported at the subsequent stations with flat contact elements, the contact bar station. The chatter marks can thus be machined away. The long engagement length of the sanding belt at the contact bar stations also makes it possible to achieve a particularly smooth panel surface.

The sanding belts are exposed to high loads. At the contact roll stations, the sanding belts may transfer powers of more than 100 kW at speeds of up to 38 m/s. Despite these high loads, belt life of more than 100,000 meters is not unusual today.

On the contact bar stations the backing of the belt is subject to heavy frictional load despite lining with graphite cloth. About 20% of the transferred power is converted to heat, which is mostly dissipated to the surroundings via the backing of the sanding belt.

The grit sizes used in the belts are specified depending on machine station and type of panels. Grit sizes P 36 or P 40 are mostly used for sizing, P 60 for fine sanding construction panels, P 80 or P 100 for final sanding of furniture chipboard. P 150 or P 180 are mostly required by customers who machine MDF.

Grit sizes for intermediate sanding are mostly determined by testing - these intermediate operations are to eliminate the scratches from sizing and to produce a suitable surface for final sanding.

Hermes recommends the specially developed sanding belt SB 379 ZZ for these different sanding operations. This belt type comprises a high-strength backing, sharp grit and a resistant bond. The belt backing material meets the highest demands - transfer of the high powers with wide manufacturing widths requires particularly strong materials, which still have to be flexible enough to run properly.

Hermes SB 379 ZZ

SB 379 ZZ is a full synthetic resin bonded type of sanding belt with silicon carbide grit on polyester stitch bonded cloth. The bond contains antistatic agents, thus reducing electrostatic charge to a minimum. This gives the following benefits:

1. No dust on panels
2. Better extraction of sanding dust
3. Longer belt life
4. No spark discharge.

A major contribution to the qualities of type SB 379 ZZ is played by the antistatic polyester stitch bonded backing.

This backing has particularly good tensile strength, and was developed specially for the manufacture of segmented wide belts. It enables the use of Hermes' unique S-shaped butt joint with an inserted foil at the rear. This joint features extremely high tensile strength.

Unlike the straight butt joints, there is no hinge effect - this makes the handling of belt change easier, and ensures smooth belt running. The reduced thickness tolerance of the joint avoids marks on the sanded boards.

Compared with paper-lined (combination) sanding belt backings, the stitch bonded backing offers many other advantages. SB 379 ZZ is waterproof, permitting problem-free operation under extreme climatic conditions. SB 379 ZZ does not have any of the deformation problems which may occur with many products when storing in humid air, especially with paper backings.

The low electrical resistance of the stitch bonded backing is an important condition for reduction of electrostatic charge. The product also incorporates steel threads at regular intervals to increase transverse stability.

Surfaces sanded with SB 379 ZZ have very consistent surface patterns, since the stitch bonded backing provides elastic grit support.

Structure of contact bar

The contact bars are usually made of aluminum. The wear parts, foam, felt pads, and graphite, of this contact element are attached to these aluminum bars. Foam pads or felt are used to compensate for hardness and thickness variations in the panels and the graphite cloth for reduction of friction between the sanding belt rear and the bar. The graphite cloths used are

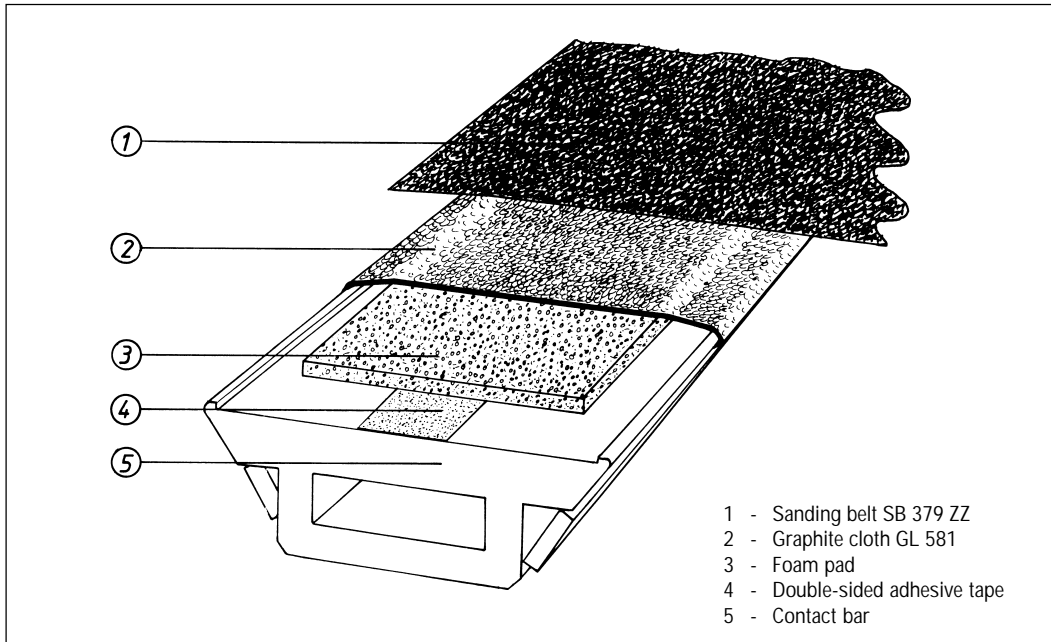
Hermes GL 580 with granular graphite and Hermes GL 581 with lamellar graphite.

Surface defects

The thermal and mechanical disadvantages of the felt material directly cause surface defects on the workpieces. The low thermal stability of felt results in burning and thus also local hardening during operation under the thermal loads, due to

friction between the tool and the contact element. These burned spots cause undesired longitudinal stripes on the panel surfaces during the sanding process.

The relatively low elasticity of felt tends to cause needle stripe formation, since the sanding belt and the felt cannot yield sufficiently if there are hard inclusions in the panels. If the sanding belts are damaged by mineral inclusions, they cause needle stripes on any panel surfaces sanded afterwards.



- 1 - Sanding belt SB 379 ZZ
- 2 - Graphite cloth GL 581
- 3 - Foam pad
- 4 - Double-sided adhesive tape
- 5 - Contact bar

Hermes products for fitting to the pressure bar

Hermes graphite cloth GL 580 and GL 581

The graphite cloths GL 580 and GL 581 comprise cotton cloth with a thick graphite layer bonded onto it.

With GL 580, the layer comprises exclusively granular graphite; with GL 581, there is a thinner layer of granular graphite, with two additional layers of lamellar graphite on top of it.

GL 580 features long life due to the high wear strength of the granular graphite. GL 581 does not quite achieve the same life as GL 580, but the powerful lubricant effect of the lamellar graphite reduces friction and thus heat generation still further.

Hermes foam pad

The Hermes foam pad comprises a particularly heat-resistant, resilient polyurethane foam material. The special properties of this material reduce the problems that otherwise occur when using felts, especially surface defects in the sanded panels. For example this foam pad virtually eliminates longitudinal stripes

that may occur when sanding with felts, due to the high thermal resistance of the Hermes foam pad. The yielding properties of the Hermes foam pad enable the flexible stitch bonded sanding belts to avoid problems from mineral inclusions in the panels. This gives a considerable reduction in needle stripes. The more elastic support of the sanding belt by the Hermes foam pad makes it possible to obtain very consistent sanding patterns.

Advantages of the Hermes foam pad:

- Clear improvement in surfaces due to considerable reduction in longitudinal stripes, needle stripes and transversal marks.
- Improved economics due to long life, with full utilisation of the graphite cloth and multiple relining capability of the foam pad with graphite cloth.

General technical notes

The belt reversal of the sanding machine should be set for smooth and consistent oscillation, especially where very wide belt widths are used. The oscillation frequency should be set to less than 20 cycles per minute if possible (with Steinemann machines, 24 cycles per minute is usually the minimum - this is then the value which should be set). The stroke of the belt movement should be about 15mm. Ensure jerk-free direction change of the sanding belt at the reversal points. If this setting is maintained, there is no danger of functional defects. Low oscillation values also increase the life of the sanding machine and save compressed air.

Attachment of the Hermes foam pad to the contact bar must not be done with liquid glue, since this could penetrate the bubbles of the foam pad and thus cause hard spots. This would produce longitudinal stripes during sanding. Double-sided adhesive tape is a good way of attachment. This must be thermally stable, leave no residue after use, and should be as thin as possible for good heat transfer. Good test results have been obtained with "tesafix 4959" (Beiersdorf AG, Hamburg).

The pad covers must be checked often for damaged spots, since the contact bars have a major influence on the surfaces of the sanded panels. If despite these checks longitudinal stripes occur on the panel surfaces, it is sufficient to replace the graphite layer and to carefully sand away any score marks in the graphite layer. Normally it is not necessary to replace the sanding belt.

The pad covers must be attached with low and consistent tension over the whole width of the pressure bar, since otherwise there is increased danger of wave formation in the graphite layer, especially if there is considerable heating up in operation.

The pad covers on the contact bar should be replaced frequently. It is not wise to try to economize on the graphite cloth, because the costs of the graphite cloth are low compared with the costs of damaged sanding belts and/ or panels with sanding defects.

Hermes alternative coated abrasives

SB 488 Y op
BS 118
SB 379 YR

Tool data

Sanding belt

Type	: SB 379 ZZ
Code	: 37990
Grit type	: Silicon carbide, black
Grit range	: P 36 to P 180
Coating	: closed
Bond	: resin, with antistatic agents
Backing	: polyester stitch bonded (steel threads at regular intervals)
Production widths	: 1370, 1440 and 1620 mm
Delivery form	: FE 041 - wide belts, segmented, up to max. width 2750 mm FE 041 - wide belts, single spliced, up to max. width 1600 mm
Joint	: EB 27 (SZ 27) for segmented wide belts, S-shaped butt joint with inserted synthetic fibre reinforced foil inserted at rear EB 39 (SG 39) for single spliced belts

Graphite cloth

Type	: GL 580 and GL 581
Code	: 58000 and 58100
Coating	: GL 580 - granular graphite GL 581 - granular graphite with two top coats made of lamellar graphite
Backing	: cotton cloth
Delivery form	: FE 011 rolls
Max. production width	: 920 mm

Foam pad

Type	: foam pad
Code	: 90096
Material	: polyurethane foam material, heat resistant up to 170°C
Density	: 150 kg/m ³
Delivery form	: rolls (FE 070 accessories) in widths 40, 70, 80 and 110 mm
Thickness	: 5 mm